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Approximating and computing nonlinear matrix differential models. (English) Zbl 1255.65148

Summary: Differential matrix models are an essential ingredient of many important scientific and engineering applications. In this work, we propose a procedure to represent the solutions of first-order matrix differential equations \( Y'(x) = f(x, Y(x)) \) with approximate matrix splines. For illustration of the method, we choose one scalar example, a simple vector model, and finally a Sylvester matrix differential equation as a test.

MSC:
65L60 Finite element, Rayleigh-Ritz, Galerkin and collocation methods for ordinary differential equations
65D07 Numerical computation using splines

Keywords:
higher-order matrix splines; first-order matrix differential equations

Full Text: DOI

References:

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